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EXAMINER
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ART UNIT	PAPER NUMBER
2625	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/662,460	MINNEBO ET AL.
	Examiner	Art Unit	
	Quang N. Vo	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 October 2007*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-19* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date *7/30/07*.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Election/Restriction

Applicant's amendment to the claims has overcome the restriction

requirement.

Response to argument

Applicant argues that the application take place at the resolution of the

output image itself and not at a resolution that is lower than the output image as

taught by He. This argument is not persuasive because the limitation "the

resolution of the output image itself and not at a resolution that is lower than the

output image" is not part of claim invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to

comply with the written description requirement. The claim(s) contains subject

matter which was not described in the specification in such a way as to

reasonably convey to one skilled in the relevant art that the inventor(s), at the

time the application was filed, had possession of the claimed invention. In

particular, the amended portion of claim 16: **"...the quantization vectors being**

N-dimensional, N being an integer value greater than zero."; the quantization

vectors being N-dimensional is not defined in the specification.

Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to

comply with the enablement requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to enable one

skilled in the art to which it pertains, or with which it is most nearly connected, to

make and/or use the invention. In particular, the amended portion of claim 16:

"...the quantization vectors being N-dimensional, N being an integer value

greater than zero."; the quantization vectors being N-dimensional is not defined

in the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

Claims 4-19 are rejected under 35 U.S.C. 103(a) as being unpatentable

over He et al. (He) (US Patent 7,031,025) in view of Klassen et al. (Klassen) (US

5,621,546).

With regard to claim 16, He discloses a error diffusion vector method to

convert an image comprising input pixels into an output image comprising output

pixels (e.g., obviously vector error diffusion method with presenting input pixel

X(m,n) (vector), column 6, lines 42-44), the method comprising the steps of:

determining a modified input pixel vector (e.g., the modified pixel value u(m,n)

(vector), column 6, line 45) based upon: an input pixel vector (e.g., input pixel value X(m,n) (vector), column 6, lines 43-44); a fraction of an error vector obtained in a previous step (e.g., a quantizer error value d(m,n) (vector), column 6, line 47-50); determining for said modified input pixel vector a quantization set consisting of quantization vectors, each quantization vector corresponding to an available output pixel vector combination of a cluster of pixels, said output pixel vector combination resulting in a density value change in said output Image (e.g., the output halftone value g(m,n) (vector), column 6, lines 47-50; column 7, lines 16-28); selecting a quantization vector out of said quantization set based upon said modified pixel vector (column 6, lines 47-50); calculating an error vector that depends on the modified input pixel and the selected quantization vector (e.g., a quantizer error value d(m,n) (vector), column 6, lines 47-50), wherein: the error vector takes into account the density value change of an area in the output image corresponding to more than one pixel (column 6, lines 50-52).

He differs from claim 16, in that he does not explicitly show error diffusion vectors in N-dimensional.

Klassen discloses error diffusion vectors in N-dimensional (column 4, lines 5-15).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified He to include error diffusion vectors in N-dimensional as taught by Klassen. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified He by the teaching of Klassen to use error diffusion method in different color space.

With regard to claim 4, Klassen discloses wherein N = 1 corresponding to one-dimensional vectors of scalar grayscale image (e.g., each color component for 1-dimensional space, column 4, lines 5-15).

With regard to claim 5, He discloses wherein said cluster comprises at least two pixels (column 7, lines 45-47).

With regard to claim 6, He discloses wherein the pixels corresponding to the area in the output image coincide with the pixels of said cluster (column 7, lines 16-28).

With regard to claim 7, He discloses wherein said density value changes are taken into account in determining said available calculated quantization values of said quantization set for said pixel (column 6, lines 42-50).

With regard to claim 8, He discloses wherein said density value changes are taken into account in determining said modified pixel value for said pixel (column 6, lines 42-50).

With regard to claim 9, He discloses wherein the clusters of pixels are unequal in size for at least two possible quantization values (column 7, lines 16-28).

With regard to claim 10, He discloses wherein the cluster size is adjusted depending on the input pixel value (column 2, lines 31-34).

With regard to claim 11, He discloses wherein the cluster size is adjusted depending on the local contrast of the pixels surrounding the input pixel (column 1, line 65 - column 2, line 1).

With regard to claim 12, He discloses wherein said method for error diffusion halftoning further comprises a halftone dot distribution alteration step in low and high intensity image regions (column 3, lines 5-17).

With regard to claim 13, He discloses wherein the method for error diffusion halftoning is a multilevel halftoning method (column 5, lines 54-55).

With regard to claim 14, He discloses wherein the output value of the pixel is set to the corresponding minimum or maximum output value if the input pixel value is the minimum or maximum possible input value (column 6, lines 21-40).

With regard to claim 15, He discloses wherein at least one of the color separated images is halftoned using a method according to claim 1 (column 5, lines 9-10, lines 18-20). Here, different kind of printers using different ink colors for printing of dots by using the halftoning method of He.

With regard to claim 17, He discloses wherein the overlap between halftone dots in different separated images is taken into account (column 8, line 65 – column 9, line 18).

With regard to claim 18, He discloses in which the plural separated images represent plural color separations (column 5, lines 6-20). Here, He also discloses a color printer for the invention.

With regard to claim 19, He discloses in which the plural separated images represent plural color separations (column 5, lines 6-20).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Vo whose telephone number is 5712701121. The examiner can normally be reached on 7:30AM-5:00PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on 5712727440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

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PAIR. Status information for unpublished applications is available through

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direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-

9199 (IN USA OR CANADA) or 571-272-1000.

Quang N. Vo   11/29/07
Patent Examiner

KING Y. POON
SUPERVISORY PATENT EXAMINER